

1 : a) Pi Geometry correlation

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About - Pi Correlation

Sunday, July 18, 2010
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This is a geometric correlation for the Value of Pi that I discovered a few years ago. With the assistance of Rodolfo Padilla Avalos XE2DDR, we are able to document the geometric correlation for the value of Pi in a right triangle and, as well, associating the area of the triangle with the area of a circle...

This is an interesting correlation and shows that there is an interesting geometric relation for the value of Pi in Euclidean Geometry.

Note, that as far as we have tested, we have not been able to prove this relation wrong, and should prove accurate for whatever values are used for calculation.

Rodolfo Padilla Avalos is the author of 'Physics with Transforms' and 'Fisica con Transformadas - Tratado Analitico de la Conduccion'... You can find more information about Physics with Transforms on <http://www.archive.org> and doing a search.

I and Rodolfo are licensed Radio Amateurs, or also known as Radio Hams... Rodolfo is XE2DDR and is licensed in Mexico and I am KE5FYD and licensed in the United States. For more information about Amateur Radio, try doing a search on Wikipedia.org.

Just a note... Rodolfo is my relative, a member of my family... I am related to him on my mother's side of family. He introduced me to many aspects of science, technology and that of radio and electronics at an early age.

Rodolfo is a graduate of Cleveland Institute of Electronics.

On the next page you can see a photo of me Jariell KE5FYD and Rodolfo XE2DDR.

1 : b) mathematical derivation

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Pi Correlation Observation - by Jariell KE5FYD & Rodolfo XE2DDR

Sunday, July 18, 2010

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By Jariell Alexis Perlman KE5FYD & Rodolfo Padilla Avalos XE2DDR radio hams.

Jariell's observation:

A triangle that has the same area of a given circle, it's formula is:

$$\frac{p r}{2} = A$$

where p is for perimeter,
 r for radio,
 A for aare af circle.

As You see this formula has the form of a formula for the triangle: where p is for height r is for base and A is for area of triangle.

When You show to me this formula, I cheked for thruth: p the perimeter has a known formula as: $p=2 \pi r$
substituting in the formula p for it's equal: $2 \pi r$

You get:

$$\frac{2 \pi r r}{2} = A$$

as You see r times r equals r^2

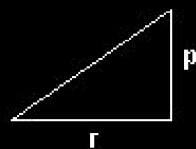
and the numbers 2, up and down are canceled: so

the formula finally is the formula of the area of the circle:

$$\pi r^2$$

This observation is interesting: You can make problems as: draw a circle whose area is equal to the area of this triangle:

To Jerry, from chofo.



Dear Jerry: I found a little errata in typing this page, so I send to You again

Jariell A. Perlman KE5FYD & Rodolfo Padilla Avalos XE2DDR (chofo)

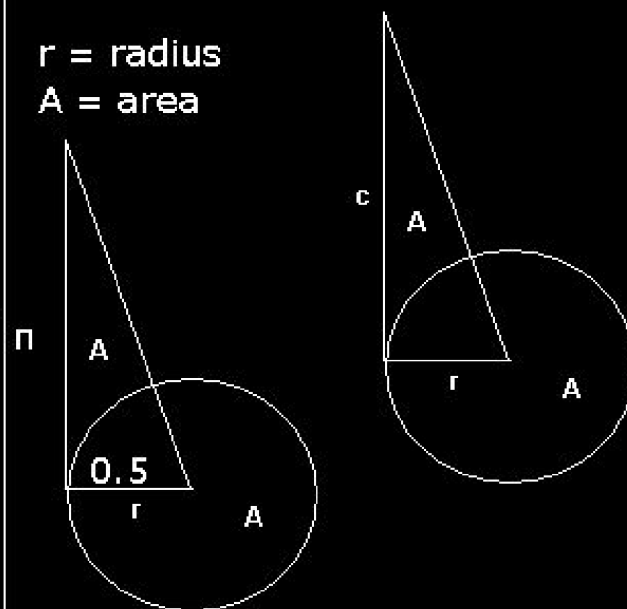
$$p = c$$

P = Perimeter

C = Circumferece

r = radius

A = area

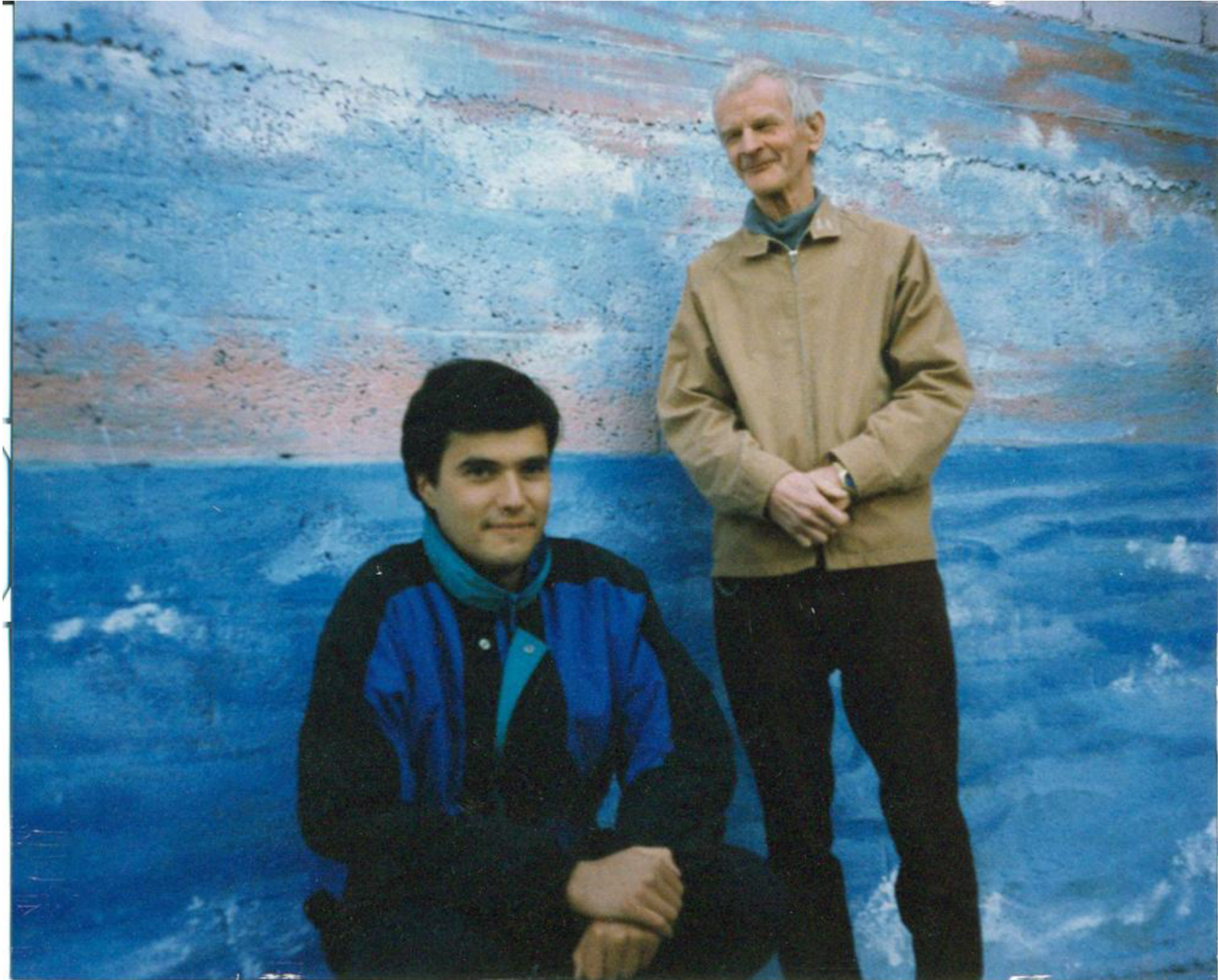


1 : c) Jariell & Rodolfo

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Photo of me, Jariell KE5FYD and Rodolfo XE2DDR

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This is a photo of me, Jariell Alexis Perlman KE5FYD on the left, sitting, and Rodolfo Padilla Avalos XE2DDR on the right, standing.

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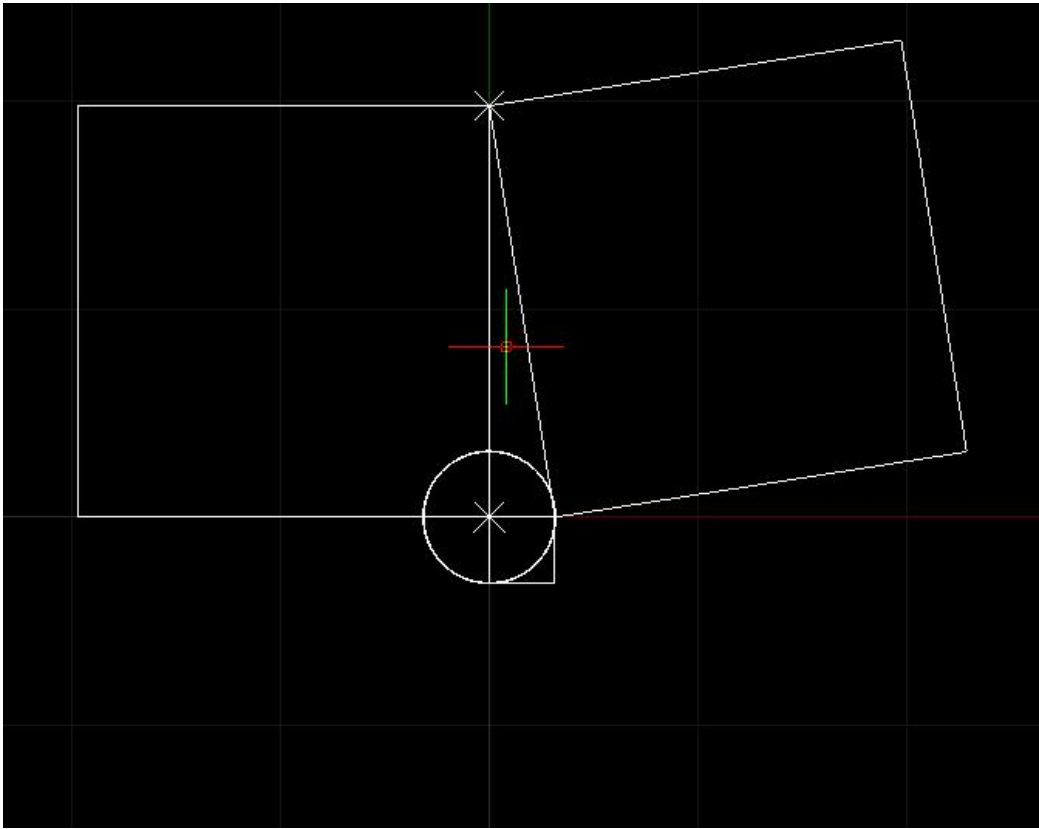
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2 - Pi Geometry correlation

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Above: Pi Geometric Correlation with Pythagoras Theorem of Right Triangle.

This is a geometric correlation for the value of Pi, in a Right triangle, where one side is equivalent to the Circumference (vertical line) and the other side being the Radius, where Area of the Right triangle is equivalent to Area of the Circle.

This offers an interesting Geometric correlation for the values of a Circle, such as Pi, Circumference, and Radius with that of a Right Triangle.

Mathematical derivations are listed for this correlation on Page 1, of this PDF document, thank you to the kindness Of my Relative Rodolfo XE2DDR, for his mathematical explanation.

c
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r n
e u
n s
c (area) e
e

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Note, I found this correlation searching for a geometric derivation for the value of Pi. In addition to thinking and searching for some correlation, I also used Generic CADD version 1.0 for the Macintosh computer.

The computer aided design software helped me see and experiment with different geometric relations. It was very helpful to visualize these relationships geometrically and visually as well as numerically, using the precision of computer aided design software.

My relative Rodolfo was curious about this. He felt that the relationship for the geometric correlation was only valid for one set of geometric values, but we soon realized an alternative correlation.

I just add this and comment here to record what we did and our findings.

I started thinking and looking at this at about the year 1999-2000.

PS. Have a look at Rodolfo's Padilla Avalos, my relative's work, Geometry of Physics with Transforms... a new method and mnemonic for learning Physics using Euclidean Geometry ... on Archive.org :

archive.org/details/PhysicsWithTransformsByRodolfoPadillaAvalos

Sincerely, Jariell Alexis Perlman : KE5FYD radio amateur (2005)

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3 : triangle calculation

Friday, September 9, 2016 7:20 PM

I Repost this, as it explains in good detail, derivations of values for a Right Triangle... Reposted from the following:

math.stackexchange.com/questions/1263645/calculate-sides-of-right-triangle-with-hypotenuse-and-area-or-perimeter

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1

(geometry) (triangle)

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asked May 2 '15 at 20:42

RadioactiveTud8013

add a comment

4 Answers

activeoldestvotes

0

↓

✓

Lets say you have right-angled triangle with sides a and b and hypotenuse h

. We can then say that:

$$h^2 = a^2 + b^2$$

If its area is A then we can also say that:

$$A = \frac{1}{2}ab$$

Which can be rearranged to give:

$$4A^2 = a^2b^2$$

Now use (1) to eliminate b and we get:

$$4A^2 = a^2(h^2 - a^2)$$

Which leads to a quadratic equation in a^2 :

$$a^4 - h^2a^2 + 4A^2 = 0$$

So, given h and A , this can be solved to find a and then (1) can be used to find the other side b .

Similar, given the perimeter p we can can say that:

$$p = a + b + h$$
$$\therefore b = (p - h) - a$$

Substitute this into (1) to get:

$$h^2 = a^2 + ((p - h) - a)^2 = a^2 + (p - h)^2 - 2a(p - h) + a^2$$

Therefore:

$$2a^2 - 2(p - h)a + (p - h)^2 - h^2 = 0$$
$$\therefore 2a^2 - 2(p - h)a + p^2 - 2ph = 0$$

Which is a quadratic in a and can be solved to find a given h and p .

share cite Improve this answer

edited May 2 '15 at 20:53

answered May 2 '15 at 20:47

Mufasa4,7420822

Great explanation. Thanks!

RadioactiveTud

May 2 '15 at 21:02

add a comment

1

↓

From the Wikipedia article on Thales' theorem:

If you know the hypotenuse, you know the base of this diagram; if you also know the area, then you can compute the height (from $A = \frac{1}{2}bh$). Then you can draw a horizontal line at the required height; where it intersects the circle is the vertex with the right angle.

share cite improve this answer

answered May 30 '15 at 16:30

user21467

add a comment

0

↓

So with the area and hypotenuse criteria $a^2 + b^2 = h^2$ and $2ab = 4A$ so that $(a + b)^2 = h^2 + 4A$ and $(a - b)^2 = h^2 - 4A$

With the hypotenuse and perimeter question you have $a + b + h = P$, which is insufficient to determine the values of a and b .

If you have area and perimeter, you have $2ab = 4A$, $a + b + h = P$, $a + b = P - h$, $a^2 + b^2 = h^2$ Using the first idea $(P - h)^2 = h^2 + 4A$ so that $P^2 - 4A = 2Ph$ This gives h and you work from A and h .

share cite Improve this answer

answered May 2 '15 at 20:52

Mark Bennet59.8k758141

add a comment

0

↓

For hypotenuse h and area A , let the legs be x and y

. Then $x^2 + y^2 = h^2$ and $xy = 2A$

. It follows that

$$(x + y)^2 = x^2 + y^2 + 2xy = h^2 + 4A$$

and

$$(x - y)^2 = x^2 + y^2 - 2xy = h^2 - 4A.$$

Thus $x + y = \sqrt{h^2 + 4A}$ and $x - y = \pm \sqrt{h^2 - 4A}$ and now we can solve for x and y .

For hypotenuse h and perimeter p , we have $x^2 + y^2 = h^2$ and $x + y + h = p$. Thus $x + y = p - h$. Note that

$$(x - y)^2 = 2(x^2 + y^2) - (x + y)^2 = 2h^2 - (p - h)^2.$$

Now we know $x - y$ and $x + y$, so as before we can find x and y .

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edited May 2 '15 at 21:00

answered May 2 '15 at 20:55

André Nicolas416k31357691

add a comment

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